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Original article

Use of allopathic and complementary medicine for preventing SARS-CoV-2 infection in Mexican adults: A national survey

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ABSTRACT

Background: The aim of this study was to assess the frequency of allopathic and complementary medicine use for preventing the infection with SARS-CoV-2 in Mexico. A descriptive and cross-sectional study was conducted using an online questionnaire among general adult population (n = 16,724) of the 32 Mexican states from March to November 2020.

Methods: The factors associated with the use, self-medication practice, and adverse reactions due the consumption of allopathic and complementary medicine to prevent infection with SARS-CoV-2 virus were assessed using a structured questionnaire. The suspected adverse reactions associated with the use of drugs or complementary medicine were reported.

Results: The prevalence (42.9%) of allopathic and/or complementary medicine use for preventing SARS-CoV-2 infection was mainly associated with unemployment [OR:2.026 (1.722–2.283)]. Acetaminophen (n = 2272) and vitamin C (n = 3252) were the main allopathic and complementary medicine products used to prevent SARS-CoV-2 infection, respectively. The prevalence of self-medication and adverse reactions was 35.3% and 4.8%, respectively. Self-medication [OR:1.930 (1.633–2.282)] and adverse reactions [OR:2.603 (2.015–3.363)] were mainly associated with individuals of low socioeconomic status. Hydroxychloroquine (21.2%) and chloroquine (15.2%) showed the highest prevalence of adverse reactions, which were mainly related to gastrointestinal disorders.

Conclusion: The use of medications and complementary medicine to prevent SARS-CoV-2 infection is prevalent (almost one-half of the respondents) among Mexican population, and it is mainly associated with unemployment. Self-medication and the adverse reactions derived from self-medication are also prevalent and seem to be influenced by low socioeconomic status.

1. Introduction

The coronavirus disease 2019 (COVID-19), caused by the new severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is a public health challenge that has produced catastrophic economic issues worldwide. SARS-CoV-2 is transmitted mainly from person-to-person (Chen et al., 2020) and the number of COVID-19 cases continues to rise globally. In Mexico, the first patients with COVID-19 were reported at the end of February 2020 (Secretaria de Salud, 2020). As a result, the government of Mexico introduced a national physical distancing program on March 23, 2020, which included the suspension of public events, closure of schools, non-

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essential business, some governmental activities, and cancellation of sporting and religious events (Secretaria de Gobernación, 2020). Then, the reopening of businesses started in June of the same year.

Elderly and immunosuppressed patients are more susceptible to be infected by SARS-CoV-2 (Chen et al., 2020). The main comorbidities of patients with COVID-19 are hypertension, diabetes, and obesity (Yang et al., 2020). Particularly, diabetes and obesity have increased the mortality and severity caused by COVID-19 in Mexican patients (Bello-Chavolla et al., 2020). Mexico has a population of around 120 million inhabitants (INEGI, 2020), and approximately 72.5% of the adult population is overweight and obese, whereas 25.5% is hypertensive (Romero-Martínez et al., 2016). This indicates that a high percentage of the population is at high risk for severe illness from COVID-19. Currently, there is no clear evidence about the efficacy and safety of existing therapeutic approaches against SARS-CoV-2 (Sanders et al., 2020). In addition, no specific treatment for COVID-19 is currently available (CDC, 2020). Therefore, many people choose complementary and alternative therapies, including the use of herbal remedies. The objective of this work was to assess the prevalence of allopathic and/or complementary medicine use, including self-medication and prescription to prevent SARS-CoV-2 infection in Mexican adults. Adverse reactions (ARs) associated with the use of herbs and drugs are also reported. The factors associated with self-medication and the presence of ARs due to self-medication are also reported. This information is useful for health professionals and the general population.

2. Materials and methods

2.1. Study design

This descriptive cross-sectional study was carried out from March to November 2020 in the 32 states of Mexico. Participants completed an online questionnaire designed to assess sociodemographic (gender, age, education, employment situation, marital status, etc.), and socioeconomic characteristics (number of rooms, number of bathrooms, numbers of occupants, and relationship to the interviewee, etc.), which were calculated according to the Mexican Association of Market and Public Opinion Research Agencies (AMAI, 2018), as well as the presence of comorbidities, and the use of treatments (allopathic and complementary medicine) to prevent SARS-CoV-2 infection. AMAI questionnaire identifies seven socioeconomic levels, based on a statistical model, ranging from A to E levels, based on the capability of meeting the needs of all members of the household and social well-being. The scores range from 0 to 205 or more. High socioeconomic status is represented by A/B and C+ levels, whereas middle and low socioeconomic status are represented by the C, C- or D+ levels and D and E levels, respectively (López-Romo, 2011).

Self-medication was considered as the respondents' personal decision influenced by the media, relative, friend, herbalist, or the drugstore staff to consume allopathic and/or complementary medicine without consulting a physician. The anonymity of respondents was maintained. The appropriate population size for this study was estimated using the Raosoft software (Raosoft, Inc. free online software, Seattle, WA, USA). Approximately, two thirds (79 million inhabitants) of the total population in Mexico is 18 years or older. The margin of error (1%), the confidence level (99%), and the response distribution (50%) were calculated. Thus, a sample size of at least 16,584 respondents was necessary. The inclusion criterion was the general population aged 18 years old and older. The duration of each survey was approximately 5 min. The protocol of this study was approved by the Institutional Committee of Bioethics in Research (University of Guanajuato, protocol number CIBIUG-P18-2020). The validation of this survey was carried out by two highly qualified co-workers in the scientific area, two months before the beginning of this survey.

2.2. Data analysis

The findings are presented as the mean (standard deviations), percentages, and odd ratios (95% CI), when specified. A chi-square or t-student test were used to determine the associations between socio-demographic and socio-economic information, and the use of treatments for preventing SARS-CoV-2 infection. The prevalence of adverse reactions due to the use of allopathic and/or complementary medicine to prevent SARS-CoV-2 infection was reported. Data analysis was executed using the software SPSS v20 (SPSS Inc, Chicago, IL) and statistical significance was set as $p < 0.05$.

3. Results

3.1. The use of allopathic and complementary medicine for preventing SARS-CoV-2 infection

A total of 16,724 respondents residing in the 32 states of Mexico and older than 18 years, completed the online survey. This cohort was composed mainly by women (61.9%), young adults (29.5 ± 12.5 years), with a high level of education (72%), single (68.2%), employed (84.2%), with a high socioeconomic status (49.4%), and with a public health insurance plan (64.4%) (Table 1). A total of 3597 respondents (21.5% of the cohort) had at least one comorbidity (Table 1). The findings indicated that 42.9% (n = 7075) of the total respondents use at least one treatment (allopathic or complementary medicine) for preventing the infection with SARS-CoV-2 (Table 1). Of these respondents, 3352 use only one treatment and 3723 consume two or more treatments. The factors associated ($p < 0.05$) with the use of allopathic or complementary medicine for preventing the infection with SARS- CoV-2 (Table 1) were age (18–25 years), female gender, low education level, low socioeconomic status, being married, unemployment, the presence of a comorbidity, and the lack of health insurance plan Among these factors, unemployment [OR:2.026 (1.722–2.283)], young adults [OR:1.657 (1.557–1.762)], and marital status (married) [OR:1.645 (1.540–1.756)] were associated with a higher probability of using allopathic or complementary medicine for preventing SARS-CoV-2 infection (Table 1).

The most used allopathic medicine was acetaminophen (n = 2272), followed by ivermectin (n = 1617), aspirin (n = 888), and ibuprofen (n = 843) (Table 2). The most common complementary medicine products were vitamin C (n = 3252), lemon (n = 2372), ginger (n = 1644), and green tea (n = 1617) (Table 3). The weekly usage frequency of these allopathic and complementary products was as follows: daily (28.9 %), 2–5 days per week (46%), and 1–3 days per week (25.1%), whereas the monthly frequency was less than a month (36.4%), 1–3 months (33.2%), and more than 3 months (30.4%). According to the respondents, a physician prescribed allopathic and/or complementary medicine for preventing SARS-CoV-2 infection in 17.9% of the cases.

3.2. Self-medication

Self-medication practice with both allopathic and complementary medicine was 35.3%, and the factors associated with this variable were low socioeconomic status [OR:1.930 (1.633–2.282)], low education [OR:1.468 (1.259–1.711)], and female gender [OR:1.251 (1.097–1.426)]. Self-medication practice for allopathic and complementary medicine was 21.9% and 23.5%, respectively.

Table 1
Factors associated with the use of allopathic and complementary medicine for the prevention of SARS-CoV-2.

Characteristic	TOTAL N = 16724	Use of any product Frequency [n (%)]			
		YES N = 7075 (42.9)	NO n = 9649 (57.1)	*p*	OR (95% CI)
Age group, years (mean ± SD)	29.5 ± 12.5	**31.8 ± 13.7**	27.7 ± 11.2	**<0.001**	–
18–25	7793 (46.6)	**3808 (53.8)**	3985 (41.3)	**<0.001**	**1.657 (1.557–1.762)**
greater than 25	8931 (53.4)	3267 (46.2)	5664 (58.7)		
Gender					
Female	10,345 (61.9)	**4649 (65.7)**	5696 (59)	**<0.001**	**1.330 (1.248–1.417)**
Male	6379 (38.1)	2426 (34.3)	3953 (41)		
Education					
College-postgraduate	12,041 (72)	4916 (69.5)	7125 (73.8)	1	Ref.
High school	1096 (6.6)	447 (6.3)	649 (6.7)	0.978	0.998 (0.880–1.132)
Elementary and middle school	3587 (21.4)	**1712 (24.2)**	1875 (19.4)	**<0.001**	**1.323 (1.228–1.426)**
Socioeconomic status					
Low	3949 (23.6)	**1719 (24.3)**	2230 (23.1)	**0.028**	**1.090 (1.009–1.176)**
Middle	4506 (26.9)	1930 (27.3)	2576 (26.7)	0.125	1.059 (0.984–1.140)
High	8269 (49.4)	3426 (48.4)	4843 (50.2)	1	Ref.
Marital status					
Married/cohabitant	5324 (31.8)	**2696 (38.1)**	2628 (27.2)	**<0.001**	**1.645 (1.540–1.756)**
Single/divorced/widow	11,400 (68.2)	4379 (61.9)	7021 (72.8)		
Employment status					
Housewife/Employed	14,078 (84.2)	**6038 (85.3)**	8040 (83.3)	**<0.001**	**1.518 (1.365–1.689)**
Unemployed	951 (5.7)	**476 (6.7)**	475 (4.9)	**<0.001**	**2.026 (1.722–2.283)**
Student	1695 (10.1)	561 (7.9)	1134 (11.8)	1	Ref.
Comorbidity					
Yes	3597 (21.5)	**1678 (23.7)**	1919 (19.9)	**<0.001**	**1.240 (1.150–1338)**
No	13,127 (78.5)	5397 (76.3)	7730 (80.1)		
Health insurance program					
None	3964 (23.7)	**1784 (25.2)**	2180 (22.6)	**<0.001**	**1.169 (1.086–1.258)**
Private	1986 (11.9)	855 (12.1)	1131 (11.7)	0.158	1.083 (0.971–1.207)
Public	10,774 (64.4)	4436 (62.7)	6338 (65.7)	1	Ref.

Table 2
Presence of adverse reactions due the consumption of allopathic medicine for preventing SARS-CoV-2 infection among Mexican population.

Treatment	Total *n* = 4554	Acetaminophen *n* = 2272	Aspirin *n* = 888	Ibuprofen *n* = 843	Dexamethasone *n* = 670	HCQ *n* = 66	CLQ *n* = 33	Azithromycin *n* = 156	Ivermectin *n* = 1617
Time of use during the week, *n* (%)									
Daily	1117 (24.5)	486 (21.4)	246 (27.7)	149 (17.7)	176 (26.3)	22 (33.3)	15 (45.5)	46 (29.5)	389 (24.1)
1 to 2 times	2216 (48.7)	1166 (51.3)	441 (49.7)	493 (58.5)	281 (41.9)	29 (43.9)	10 (30.3)	73 (46.8)	851 (52.6)
3 to 5 times	1221 (26.8)	620 (27.3)	201 (22.6)	201 (23.8)	213 (31.8)	15 (22.7)	8 (24.2)	37 (23.7)	377 (23.3)
Time of use, *n* (%)									
Less than a month	1805 (39.6)	1025 (45.1)	383 (43.1)	412 (48.9)	313 (46.7)	32 (48.5)	10 (30.3)	86 (55.1)	446 (27.6)
1 to 3 months	1433 (31.5)	714 (31.4)	262 (29.5)	224 (26.6)	195 (29.1)	21 (31.8)	10 (30.3)	43 (27.6)	535 (33.1)
More than 3 months	1316 (28.9)	533 (23.5)	243 (27.4)	207 (24.6)	162 (24.2)	13 (19.7)	13 (39.4)	27 (17.3)	336 (39.3)
Recommended by, *n* (%)									
Physician	894 (19.6)	572 (25.2)	226 (25.5)	230 (27.3)	129 (19.3)	23 (34.8)	10 (30.3)	75 (48.1)	230 (14.2)
Own initiative	1544 (33.9)	690 (30.4)	223 (25.1)	209 (24.8)	242 (36.1)	15 (22.7)	8 (24.2)	19 (12.2)	605 (37.4)
Relative/friend	1504 (33)	719 (31.6)	288 (32.4)	297 (35.2)	211 (21.5)	16 (24.2)	8 (24.2)	46 (29.5)	583 (36.1)
Drugstore	126 (2.8)	83 (3.7)	20 (2.3)	35 (4.2)	23 (3.4)	0	0	0	15 (0.9)
Herbalist	63 (1.4)	19 (0.8)	9 (1)	9 (1.1)	11 (1.6)	1 (1.5)	1 (3)	1 (0.6)	28 (1.7)
Media	423 (9.3)	189 (8.3)	122 (13.7)	63 (7.5)	54 (8.1)	11 (16.7)	6 (18.2)	15 (9.6)	156 (9.6)
Adverse reactions	249 (5.5)	122 (5.4)	81 (9.1)	54 (6.4)	56 (8.4)	14 (21.2)	5 (15.2)	11 (8.5)	22 (14.1)

HCQ: Hydroxychloroquine. CLQ: Chloroquine

3.3. Adverse reactions

Of the 7075 respondents who use allopathic or complementary medicine for preventing SARS-CoV-2 infection, a total of 337 ARs were reported. The total frequency of ARs was 4.8%. The factor associated with the presence of ARs were low socioeconomic status [OR:2.603 (2.015–3.363)], low education [OR:2.419 (1.915–3.056)], and female gender [OR:1.696 (1.361–2.114)]. The prevalence of ARs in allopathic and complementary medicine was 5.5% and 4.8%, respectively (Tables 2 and 3). Overall, the most common ARs were stomachache and gastritis (n = 98), nausea and vomiting (n = 57), headache (n = 40), and diarrhea (n = 32). Considering the use of allopathic medicine, hydroxychloroquine (HCQ) (21.2%) induced the highest number or ARs, followed by CLQ (15.2%), and ivermectin (14.1%) (Table 2). The most prevalent gastrointestinal ARs were induced by HCQ (7.6%) and azithromycin (4.6%), followed by allergic reactions by HCQ (4.5%) (Table 2).

Of the complementary medicine, ginseng (11.7%) induced more ARs, followed by chlorine dioxide (10.4%), and transference factor (9.7%) (Table 3). The most prevalent ARs induced by complementary medicine were gastrointestinal induced by chlorine dioxide (5%), *Garcinia cambogia* (4.9%), and transference factor (4.5%) (Table 3). More details about the presence of ARs due the consumption of allopathic medicine for preventing SARS-CoV-2 infection can be found in Tables 2 and 3.

4. Discussion

The findings of this study showed that the main factor associated with the use of allopathic and complementary medicine for

Table 3
Presence of adverse reactions due the consumption of complementary medicine for preventing SARS-CoV-2 infection among Mexican population.

Treatment	Total *n* = 4731	Chlorine dioxide *n* = 337	Transfer factor *n* = 134	Green tea *n* = 1617	Zinc *n* = 666	Vitamin C *n* = 3252	Lemon *n* = 2372	Curcuma *n* = 821	Ginger *n* = 1644	Propolis *n* = 689	Ginseng *n* = 256	Garcinia *n* = 61	Echinacea *n* = 231
Time of use during the week, *n* (%)													
Daily	1491 (31.5)	142 (42.1)	43 (32.1)	389 (24.1)	281 (42.2)	1021 (31.4)	668 (28.2)	258 (31.4)	450 (27.4)	200 (29)	82 (32)	28 (45.9)	89 (38.5)
1 to 2 times	2181 (46.1)	114 (33.8)	53 (39.6)	851 (52.6)	225 (33.8)	1529 (47)	1179 (49.7)	349 (42.5)	795 (48.4)	330 (47.9)	119 (46.5)	21 (34.4)	79 (34.2)
3 to 5 times	1059 (22.4)	81 (24)	38 (28.4)	377 (23.3)	160 (24)	702 (21.6)	525 (22.1)	214 (26.1)	399 (24.3)	159 (23.1)	55 (21.5)	12 (19.7)	63 (27.3)
Time of use, *n* (%)													
Less than a month	1546 (32.7)	129 (38.3)	26 (19.4)	446 (27.6)	175 (26.3)	1034 (31.8)	742 (31.3)	158 (19.2)	451 (27.4)	172 (25)	55 (21.5)	18 (29.5)	55 (23.8)
1 to 3 months	1641 (34.7)	107 (31.8)	59 (44)	535 (33.1)	230 (34.5)	1162 (35.7)	767 (32.3)	280 (34.1)	543 (33)	255 (37)	91 (35.5)	19 (31.1)	81 (35.1)
More than 3 months	1544 (22.4)	101 (30)	49 (36.6)	636 (39.3)	261 (39.2)	1056 (32.5)	863 (36.4)	383 (46.6)	650 (39.5)	262 (38)	110 (43)	24 (39.3)	95 (41.1)
Recommended by, *n* (%)													
Physician	807 (17.1)	73 (21.7)	36 (26.9)	230 (14.2)	200 (30)	659 (20.3)	309 (13)	117 (14.3)	226 (13.7)	97 (14.1)	48 (18.8)	22 (36.1)	47 (20.3)
Own initiative	1802 (38.1)	61 (18.1)	48 (35.8)	605 (37.4)	221 (33.2)	1254 (38.6)	933 (39.3)	362 (44.1)	639 (38.9)	249 (36.1)	115 (44.9)	22 (36.1)	115 (49.8)
Relative/friend	1539 (32.5)	157 (46.6)	29 (21.6)	583 (36.1)	181 (27.2)	1024 (31.5)	845 (35.6)	222 (27)	568 (34.5)	236 (34.6)	56 (21.9)	9 (14.8)	51 (22.1)
Drugstore	58 (1.2)	3 (0.9)	5 (3.7)	15 (0.9)	7 (1.1)	42 (1.3)	19 (0.8)	4 (0.5)	9 (0.5)	7 (1)	7 (2.7)	0	3 (0.9)
Herbalist	80 (1.7)	3 (0.9)	2 (1.5)	28 (1.7)	11 (1.7)	30 (0.9)	31 (1.3)	17 (2.1)	41 (2.5)	24 (3.5.)	12 (4.7)	4 (6.6)	15 (6.5)
Media	445 (9.4)	40 (11.9)	14 (10.4)	156 (9.6)	46 (6.9)	243 (7.5)	235 (9.9)	99 (12.1)	161 (9.8)	76 (11)	18 (7)	4 (6.6)	3 (1.3)
Adverse reactions, *n* (%)	227 (4.8)	35 (10.4)	13 (9.7)	53 (3.3)	29 (4.4)	113 (3.5)	128 (5.4)	4 (4.9)	75 (4.6)	45 (6.5)	30 (11.7)	4 (6.6)	11 (4.8)

preventing SARS-CoV-2 infection was unemployment. Derived from the pandemic, many people closed their business or lost their jobs. Some of these individuals are now self-employed dependent on the informal economy without access to social health protection. In addition, unemployment may have serious negative implications, such as anxiety and depression.

The most frequent used product for preventing SARS-CoV-2 infection was vitamin C. Liu et al., 2020 have shown that 24 g/day of intravenous vitamin C for 7 days suppress the levels of IL-6 and IL-10, which decreased inflammation produced by SARS-CoV-2 and improved pulmonary function. The most used allopathic medicine was acetaminophen and ivermectin. The results agree with other studies, which reported that the most frequent prophylactic treatment for SARS-CoV-2 infection were ivermectin and HCQ (Nasir et al., 2020; Mirza et al., 2020; Zavala-Flores and Salcedo-Matienzo, 2020). The WHO recommended the use of acetaminophen and dexamethasone for the treatment of COVID-19 (WHO, 2020). This could explain, in part, the high prevalence of acetaminophen use to avoid infection with SARS-CoV-2. Presently, the clinical efficacy of ivermectin against COVID-19 is scarce. Vitamin C and lemon were the most frequently used complementary medicine to prevent SARS-CoV-2 infection. This finding could be attributed to the antioxidant, anti-inflammatory, and immunomodulatory actions of vitamin C and lemon in several respiratory diseases (Hoffman et al., 2016; Harima-Mizusawa et al., 2016). In other studies, the most commonly used medicinal plant to prevent SARS-CoV-2 infection were garlic (*Allium sativum*) and lime (*Citrus aurantifolia*) (El Alami et al., 2020; Tsouh Fokou and Youmsi Fokouo, 2020).

Isolation, mental stress, and the inaccurate spread of information on social media could trigger self-medication practice (Nasir et al., 2020). In this study, the prevalence of self-medication with both allopathic and complementary medicine was 35.3%. The prevalence of self-medication used for preventing SARS-CoV-2 infection reported in other countries ranges from 26% to 71.4% (Nasir et al., 2020; Mirza et al., 2020; Nicholas et al., 2020; Zavala-Flores and Salcedo-Matienzo, 2020). Some analgesics cited in this study, such as acetaminophen, aspirin, and ibuprofen are sold in the absence of a medical order, and this fact contributes further to self-medication practice. After August 2020, dexamethasone, ivermectin, CLQ, and HCQ were sold in Mexican drugstores exclusively with a medical order to avoid irrational use and medicine shortages (SSA, 2020).

The prescription prevalence with allopathic and/or complementary medicine to prevent SARS-CoV-2 infection by physicians was 17.9%. The prescription of medications used for the prevention of SARS-CoV-2 infection ranges from 28.6% to 57.6% (Nasir et al., 2020; Zavala-Flores and Salcedo-Matienzo, 2020).

Among the allopathic medicine cited in this work, HCQ and CLQ showed the highest prevalence of ARs, mainly related to gastrointestinal disorders. The results agree with Gevers et al. (2020), who showed that the most frequent ARs shown in COVID-19 patients administered with HCQ or CLQ were of gastrointestinal origin. Among the complementary medicine, ginseng showed the highest prevalence of ARs. Coon and Ernst (2002) showed that gastrointestinal disorders are the main ARs induced by ginseng and are in concordance with our results.

Self-medication and the presence of ARs were mainly associated with a low socioeconomic status. This finding can be explained since Mexico has approximately 2.4 physicians for every 1000 inhabitants (OECD, 2017). This indicates that many people might lack access to medical assistance, and thus choose complementary and alternative therapies. For many people in Mexico, the access to health care services is often limited due to low socioeconomic status. Respondents with low socioeconomic status (32.5%) of the participants who use allopathic and/

or complementary medicine go to family or friends for advice when self-medicating.

The recommendations of this study are based on the study findings. Patients should ask their physicians before deciding to consume any complementary medicine product. Furthermore, it is essential to provide access and distribution of understandable and valid information to the general population about the possible ARs from the use of allopathic and complementary medicine in the prevention of SARS-CoV-2 infection.

The strength of this study is the large number of respondents from all over the country and the scientific information obtained, which can be useful for healthcare professionals and general population. In addition, to our knowledge, this is one of the first reports in the world that quantitatively describes the use of allopathic and complementary medicine for preventing SARS-CoV-2 infection.

4.1. Limitations

Due to the pandemic situation, this work was carried out using an online survey, and thus the results may not represent the entire Mexican population. In this context, most participants were young adults with high socioeconomic status and with internet access. The elderly and respondents from rural regions of the country without internet access and very-low socioeconomic status could not be considered in this study, which may lead to demographic selection bias. Another limitation was that the evaluations were self-reported by the participants, which might not represent actual practices.

4.2. Conclusions

The use of medications and complementary medicine for preventing SARS-CoV-2 infection is prevalent (almost one half of the cohort) among Mexican population and it is influenced by sociodemographic and socioeconomic factors, mainly by unemployment. Findings in this study show a prevalence of self-medication practices (35.3%) using allopathic and/or complementary medicine for preventing SARS-CoV-2 infection, whereas the total frequency of ARs was 4.8%.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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